

CLAIMS

We claim:

1. A process for rapidly infusing a synthetic resinous substrate with an alkali metal nitrite, comprising,
 - 5 (i) depositing alkali metal nitrite crystals larger than 10 μm in a pressure vessel and pressurizing the vessel with carbon dioxide until supercritical conditions are attained;
 - (ii) withdrawing a solids-free solution containing from about 1 to 15% by weight of the alkali metal nitrite, from the pressure vessel;
 - (iii) contacting the synthetic resinous substrate with the solids-free solution for a time
10 sufficient to transfer at least a portion of the alkali metal nitrite into the synthetic resinous substrate while maintaining the carbon dioxide under supercritical conditions; and,
 - (iv) decreasing pressure or temperature, or both, on the synthetic resinous substrate sufficiently to evolve carbon dioxide and infuse micronized solid alkali metal nitrite
15 crystals essentially uniformly distributed in the synthetic resinous substrate, infused crystals being in an amount less than 2% by weight, and more than 90% of infused crystals are in a size range smaller than 10 μm .
2. The process of claim 1 including depositing with the alkali metal nitrite an
20 organic compound which is substantially soluble in supercritical carbon dioxide; withdrawing a solids-free solution containing from about 1 to 15% by weight of the alkali metal nitrite in combination with the organic compound; contacting the synthetic resinous substrate with the solids-free solution for a time sufficient to transfer at least a portion of the alkali metal nitrite in combination with the
25 organic compound into the synthetic resinous substrate while maintaining the carbon dioxide under supercritical conditions; and, decreasing pressure or temperature, or both, on the synthetic resinous substrate sufficiently to evolve carbon dioxide and deposit micronized solid alkali metal nitrite crystals in combination with the organic compound essentially uniformly distributed in
30 the synthetic resinous substrate.

3. The process of claim 2 wherein the alkali metal nitrite crystals deposited in the pressure vessel are in the size range from about 10 μm to 44 μm .
4. The process of claim 2 wherein the alkali metal nitrite is selected from the group consisting of sodium nitrite and potassium nitrite.
5. The process of claim 1 including introducing a second fluid miscible with carbon dioxide to form a common supercritical phase.
6. The process of claim 2 including introducing a second fluid miscible with carbon dioxide to form a common supercritical phase.
7. The process of claim 5 wherein the second fluid is selected from the group consisting of ethylene, ethane, nitrous oxide, chlorotrifluoromethane and trifluoromethane.
8. The process of claim 6 wherein the second fluid is selected from the group consisting of ethylene, ethane, nitrous oxide, chlorotrifluoromethane and trifluoromethane.
9. A two-stage process for infusing crystals of an alkali metal nitrite in combination with an organic compound into a polymeric substrate, comprising,
 - (i) dissolving the alkali metal nitrite and the organic compound in carbon dioxide held in an autoclave under supercritical conditions to form a solution containing from about 1 to 15% by weight of the alkali metal nitrite and organic compound;
 - (ii) filtering the solution to ensure that substantially no particulate solids are present in filtered solution;
 - (iii) contacting the polymeric substrate with the filtered solution for less than 30 minutes so as to transfer enough solids-free solution into the substrate to infuse it with less than 2% by weight of the alkali metal nitrite and the organic compound;
 - (iv) decreasing the pressure on the substrate to infuse the polymeric substrate with

crystals smaller than 10 μm .

10. The process of claim 9 wherein the alkali metal nitrite crystals deposited in the pressure vessel are in the size range from about 10 μm to 44 μm , and infused crystals
5 are present in an amount less than 2% by weight, and more than 90% of infused crystals are in a size range smaller than 10 μm .

11. The process of claim 9 including introducing a second fluid miscible with
10 carbon dioxide to form a common supercritical phase.